

1. A method for reducing the pumping duty cycle of a pump assembly associated with a pumping well comprising the steps of:

continuously running an engine;

connecting [an] the engine with a pump assembly through a [pneumatically actuated] clutch assembly having a pneumatically inflatable bladder for connecting a hub of the clutch with a clutch plate to transmit rotary motion from the engine to the pump assembly;

determining a selected event to actuate the clutch to connect the engine with the pump assembly; and

providing a pressurized gas on the occurrence of the selected event to [actuate the clutch] inflate the bladder to connect the pump assembly with the engine to remove liquid from the gas well to maintain an inflow of hydrocarbons from a producing formation.

9. A pumping assembly for maintaining hydrocarbon production from a well, comprising:

a pumping assembly for pumping liquid from the gas well;

an engine for driving the pumping assembly;

a pneumatic clutch assembly having a pneumatically inflatable bladder for connecting a hub of the clutch with clutch plate to transmit rotary motion from the engine to the pump assembly [for connecting the engine with the pumping assembly];
and

a control unit for [actuating the pneumatic clutch] inflating the bladder when needed to pump liquid from the gas well to maintain hydrocarbon production from the well while enabling the engine to run continuously.

10. A pumping assembly according to Claim 9, wherein the control unit connects gas from the well to the pneumatic clutch for [actuating the clutch] inflating the bladder.

REMARKS

The Examiner has objected to the drawings for failing to show a valve arrangement used to "exhaust gas from pneumatic clutch 28." The Specification is objected to for reasons specified by the Examiner. Claims 1-13 are rejected under 35

USC 112, first paragraph, as failing to provide an enabling disclosure for exhausting gas from the pneumatic clutch. Claims 1-2 and 5 are rejected under 35 USC 103 (a) as being unpatentable over Turner et al. in view of Dower et al. Claims 3-4 and 6 are rejected under 35 USC 103(a) as being unpatentable over Turner et al. in view of Dower et al. and further in view of Gallaway. Claim 7 is rejected under 35 USC 103 (a) as being unpatentable over Turner et al., in view of Dower et al. and further in view of Kuehn, III et al. Claim 8 is rejected under 35 USC 103(a) as being unpatentable over Turner et al. in view of Dower and Kuehn, III et al., and in further view of Gallaway. Claim 9 is rejected under 35 USC 103(a) as being unpatentable over Dye in view of Dower et al. Claims 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over Dye and Dower et al., in further view of Gallaway. Claims 12 and 13 are rejected under 35 USC 1-3(a) as unpatentable over Dye, in view of Dower et al. and in further view of Kuehn, III et al.

First, applicant has amended the Abstract and specification as required by the Examiner.

Next, applicant respectfully traverses the objection to the drawing and the rejection under 35 USC 112 for failing to show or teach a valve arrangement for exhausting gas from the pneumatic valve. The Examiner's comment is "There is no disclosure how the low pressure gas is returned to the system through line 38."

Applicant's teaching on deflation of the pneumatic clutch is as follows: "For either a timing unit or a level monitoring unit, a simple arrangement of solenoid valve or valves is actuated to supply gas to pneumatic clutch 28 or to exhaust gas from pneumatic clutch 28." (page 5, lines 1-3).. "Solenoid 88 if actuated to provide gas to clutch 28 through line 38 or to exhaust gas from clutch 28." (page 5, lines 9-11). There is no requirement to return gas to the system, so no piping/valving arrangement is shown. Gas, whether natural gas from a well or compressed gas from another source, simply exhausts from line 38 through solenoid valve 88, as fully described in the specification. The gas simply exhausts to atmosphere through solenoid valve 88 and no piping is needed or described.

This ground for rejection should be withdrawn. Applicant is also including a Declaration from Steven S. Dunn, a person of ordinary skill in the art of hydrocarbon production, to show the understanding of applicant's specification on exhausting gas to

deflate the bladder to decouple the clutch and that this understanding teaches such a person how to practice applicant's claimed invention.

Referring now to the rejection of Claims 1-2 and 5 as unpatentable over Turner et al. in view of Dower et al., applicant respectfully traverses the application of Dower et al. to applicant's claimed invention. The Examiner comments that Dower et al. discloses "a control system for an oil rig, teaches a method of connecting an engine to a pump assembly through a pneumatically actuated clutch . . . and providing pressurized gas on occurrence of the selected event to actuate the clutch." However, Dower et al. have no teaching about pumping from a well. Dower et al. teach only a well drilling rig (Col. 3, lines 39-41). The pump referenced by the Examiner is a drilling mud pump (Col. 4, lines 34-41) for pumping drilling mud into a borehole that is being drilled. There is no showing or suggestion on applying or adapting the drilling mud positive displacement pump, clutch, and control system of Dower et al. to a reciprocating pump system for pumping oil from a borehole. Claims 1-2 and 5 are clearly allowable over Turner et al. since Dower et al. cannot properly be combined with Turner et al.

In order to further clarify applicant's invention, Claims 1 and 9 have been amended to recite that the operable portion of the clutch is an inflatable bladder that is pneumatically inflated to connect the clutch hub with the clutch plate so that rotary motion is transmitted through the clutch. Support for this amendment is found at Page 5, lines 12-29, of applicant's specification. This mode of clutch enables the engine to be smoothly connected/disconnected from the clutch assembly so that the engine can run continuously and not have to be subjected to the rigors of startup in an unattended operation.

Claims 3-4 and 6 are rejected under 35 USC 103(a) as being unpatentable over Turner et al., in view of Dower et al., and in further view of Gallaway. The Examiner comments that Gallaway discloses a method using pressurized gas from a well to activate a pump and that this method was advantageously cost effective and it would have been obvious to use gas from a well in applicant's invention for cost effectiveness. Gallaway uses gas from a well to power an air motor, which, in turn, powers a pump. Such a use would consume large quantities of gas with a concomitant cost if the gas were procured from an outside source. Applicant uses only small quantities of gas to

actuate a clutch bladder. Cost is not a consideration in this application due to the small quantities. Convenience is a factor so that gas from a local production well can be used, when available; but a cost advantage is simply not a factor. It clearly would not be obvious from a reading of Gallaway to adapt a local gas supply for actuating a pump clutch. As noted above, Dower et al. are simply not applicable to a pumping unit. Claims 3-4 and 6 are clearly allowable over any combination of Turner et al., Dower et al., and Gallaway.

Claim 7 is rejected under 35 USC 103(a) as being unpatentable over Turner et al., in view of Dower et al., and further in view of Kuehn, III et al. Kuehn, III et al. disclose a liquid level controller for oil wells that actuates a pump to maintain the level between selected elevations. Applicant notes that Kuehn, III et al. teach turning a motor on and off to power the well pump and do not teach any control technique for permitting the motor to continue to run when the pump is not pumping, i.e., for disconnecting the motor from the pump rather than turning the motor off. Thus, the combination of a controller with a clutch would not be obvious from the teachings of Kuehn, III et al. Dower et al. is not applicable as discussed above. Claim 7 is allowable over any combination of Turner et al., Dower et al., and Gallaway.

Claim 8 is rejected under 35 USC 103(a) as being unpatentable over Turner et al., in view of Dower and Kuehn, III et al., in further view of Gallaway. Dower et al. is not applicable, as discussed above, and the teachings of Kuehn, III et al. and Gallaway do not show or suggest a clutch actuating mechanism for connecting and disconnecting a motor with a well pump where the motor can run continuously without the need for increased supervision when motors are cycled on and off.

Claim 9 is rejected under 35 USC 103(a) as being unpatentable over Dye in view of Dower et al. Dye teaches a well pumping system but does not disclose a pneumatic clutch; Dower et al. teach a pneumatic clutch. As fully discussed by applicant above, Dower teaches a well drilling system where a pneumatic clutch is coupled to a mud pump. Applicant respectfully traverses the Examiner's statement that it would have been obvious to use the pneumatic clutch taught by Dower et al. in the pump unit disclosed by Dye. Dye teaches turning an engine on and off, where the engine is coupled to the pump through a fluid coupling. There is no clutch in the unit taught by Dye and there is no suggestion to use a clutch and certainly no suggestion to use the

pneumatic clutch taught by Dower et al. Applicant's recitation of a clutch using an inflatable bladder is certainly not obvious from a reading of Dye and Dower et al.

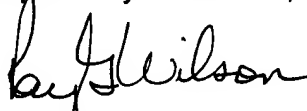
Claim 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over Dye, in view of Dower et al., and in further view of Gallaway. As above, Gallaway adds a teaching on the use of natural gas from a well to drive an air motor to obtain cost saving from the use of well-head gas. As noted above, there is no applicable showing or suggestion to combine Dye with Dower et al. As further noted above, the economic advantage taught by Gallaway to use well head gas to drive an air motor simply has no application to applicant's invention where only small quantities of gas are used at any one time.

Claims 12 and 13 have been rejected under 35 USC 103(a) as unpatentable over Dye, in view of Dower et al., and further in view of Kuehn, III et al. Kuehn, III et al. teach a liquid level controller for oil wells to cycle a pump on and off. As noted by applicant above, there is no applicable showing or suggestion to combine Dye with Dower et al. and this rejection should be withdrawn.

Applicant respectfully asserts that amended Claims 1-13 are in condition for allowance and the Examiner is respectfully requested to pass Claims 1-13 to issue.

Applicant's attorney would be pleased to discuss any of these matters with the Examiner if the Examiner considers such a discussion would assist in placing the case in condition for allowance.

Respectfully submitted,



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Dated: 14 July 2000